SONY®

Multi-Access Video Disk Recorder

MAV-777

Drive The High Definition
Disk Recorder

Introduction

The MAV-777 is Sony's flagship Multi-Access Video Disk Recorder designed for use in today's high-definition (HD) applications. For live, sports, news, and postproduction applications, the MAV-777 is an outstanding editing disk recorder that offers superb picture quality and functionality to meet your demanding broadcast requirements. The Sony MAV-777 inherits the operability and reliability of the MAV-555A and takes this one step further with the Sony HDCAM® compression scheme. This model offers HD SDI connectivity in the 1080/59.94i format which is based on the SMPTE-292M standard.

Unique functionality and practical features make the MAV-777 an ideal editing disk recorder. The VTR-style control panel allows quick and easy linear-like access to files while exploiting the speed available with nonlinear, direct access to the Hard Disk Drives (HDDs). Furthermore, robust HDDs preserve your video and audio files while allowing you to record up to eight hours of video in the HD format.[1] Internal downconverters are also available for you to share HD material with SD equipment while securing the material for current and future HD applications. In this multi-format era, the MAV-777 is an ideal investment for your broadcast needs.

Drive the Sony MAV-777 Multi-Access Video Disk Recorder today, and you'll experience the difference.

[1] The MAV-777/08 records 8 hours of HDCAM compressed video.

Features and Benefits

HDCAM Codec For Superlative Picture Quality

The MAV-777 offers outstanding picture quality by incorporating the Sony HDCAM Codec to meet your growing HDTV needs. In order to maintain this high picture quality, the MAV-777 was designed to meet SMPTE-292M standards offering HD SDI connectivity in the 1080/59.94i format.

Up To Four Synchronous HD A/V Channels (Simultaneous Operation)

The MAV-777 comes standard in a one in/one out configuration, and is expandable to handle up to four channels in a choice of one of three configurations: 1 In/3 Out, 2 In/2 Out, or 3 In/1 Out. The MAV-777 was designed to be flexible, so you can choose the configuration that fits your application. Because you can edit while transferring files, you can increase productivity during live production or postproduction.

Asynchronous File Transfer With Gigabit Ethernet™ (GbE)

The Broadband Era is a reality, and asynchronous file transfer of multimedia files is becoming commonplace. Using GbE infrastructure in a controlled environment, multiple MAV-777 disk recorders outfitted with the BKMA-750 Asynchronous Network Interface Kit can be connected allowing file sharing and transfer among all of the units.[2] The advantage of asynchronous file transfer is that files can be transferred while editing, no central server is required, and the cost is relatively low. This setup allows edit teams to communicate and share material more effectively.

Internal Downconverters

Internal downconverters are standard on the MAV-777 in order to maintain backward compatibility with SD systems. All HD-SDI inputs and outputs can be downconverted to component SD-SDI. HD-SDI input signals can be output as SD-SDI signals with time code superimposition using an "R" port. This is typically used for SD monitoring purposes. You can also edit HD material first and then convert the material to an SD signal using "D CONV" connectors on a "P" port. One connector offers time code superimposition while the other does not. This downconversion feature is convenient when an SD signal is necessary for playout or for interfacing with systems that are not capable of accepting HD signals.

Intuitive VTR-Style Front Control Panel

For operational convenience, the MAV-777 is equipped with the BKMA-505 Disk Recorder Control Panel as a standard feature. This VTR-style control panel offers the user a familiar interface allowing intuitive operation, which results in a very short learning curve. For clear and easy viewing of the file information and functions, the panel has a 6.4-inch[3] high-resolution color LCD information display. Furthermore, the panel controls allow you to perform audio and video file management, editing functions, timer record/playback, and simultaneous dual playouts.

Dedicated Editing Control Panels

If you prefer to edit with your MAV-777 remotely in a linear-like manner, there are three dedicated control panels available. They are the MAVE-F555 Editing Panel, the MAVE-D555 Dial Panel, and the BKNE-1011 Editing Fader Panel. The MAVE-F555 is connected directly to the MAV-777, and is used for functions such as file selection, edit control, and controlling external VTRs. The MAVE-D555 comes with a Jog/Shuttle dial for locating clips, a keypad for entering edit points and selecting effect patterns, and an LCD display. Finally, the BKNE-1011 is a fader control panel used for independent control of audio tracks and for manually executing effect transitions. Hard-key controls such as those offered on these panels are not available with most nonlinear editors. These controls offer you the best of two worlds; they allow you to edit with the quickness of a linear editor while enjoying the speed available with direct access to the MAV-777 HDDs. Once you experience the ease of operation at the helm of these controls, you will be glad to relinquish your complicated linear editor.

[2] *Availability of the BKMA-750 Asynchronous Network Interface Kit is TBD.*
[3] *Viewable area measured diagonally.*

Ethernet Control

By connecting a PC running file management software to the Ethernet port on the MAV-777, you can view files, search for files, and control the unit remotely. This is a convenient way of controlling the MAV-777 if you prefer a GUI-based operating environment. If you have multiple MAV-777 disk recorders connected via GbE, you can also share and transfer files among the different units.

Controllable From BVE Editors And Compatible With Sony Switchers

When working in a live production or postproduction environment with MVS or DVS Series switchers and/or BVE editors, the MAV-777 can be effortlessly controlled as if you are controlling multiple VTRs. In this system configuration, the MAV-777 is best used as a clip feeder, a synchronized key/fill source, a graphics feeder, or a temporary buffer for compositing. This innovative way of accessing commonly used material will streamline your production efforts allowing you to create quality programs while reducing operating costs. The MAV-777 is compatible with most broadcast quality switchers and editors outfitted with RS-422A ports.

Video And Audio Editing With Real-Time Effects

Cut editing and A/B roll-editing with real-time effects such as dissolve and wipe are available on the MAV-777 even when the unit is in a stand-alone configuration.[4] Functions such as A/V-split, channel swap, voice over, and audio crossfades are also available with the independently editable audio channels. The Digital Jog Sound (DJS) feature gives you sound quality reminiscent of VTRs allowing you to locate a specific sound clip with precision.

High Reliability And Durability

The last thing you want to worry about while producing your program is data loss. With this in mind, the MAV-777 was designed with built-in fault tolerance. To prevent data loss, the MAV-777 incorporates RAID-3 technology and robust error correction in its video drives and RAID-1 technology for fast read performance and high data availability in its audio drives. Moreover, the HDDs are isolated from the recorder chassis of the MAV-777, providing a system durable enough to withstand the shock and vibration encountered in an OB vehicle.
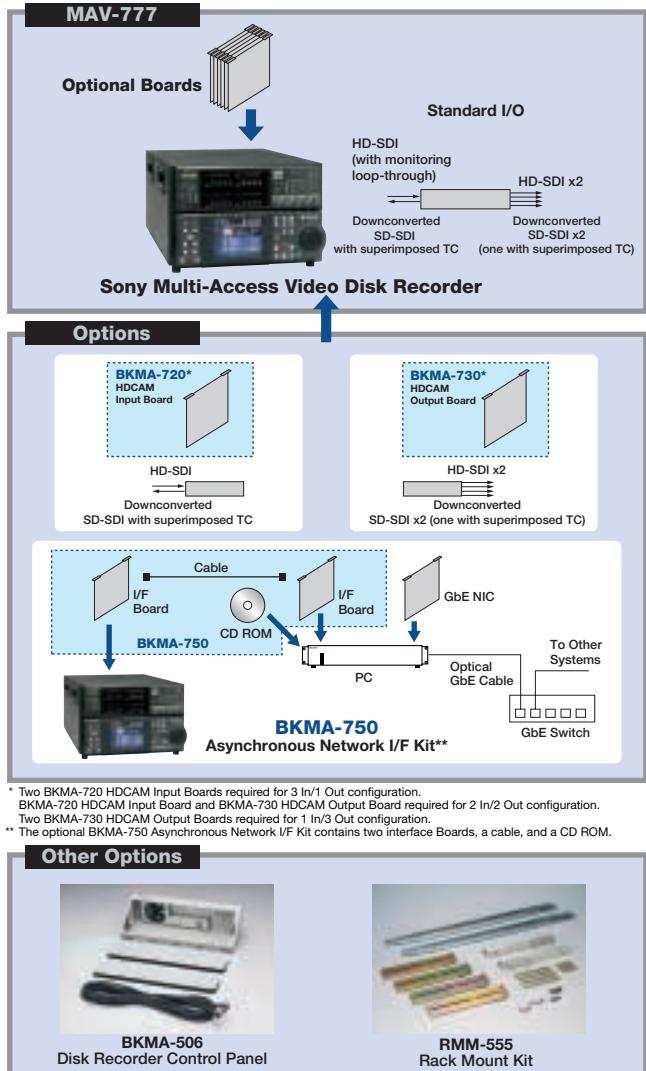
Convenient Data Transfer With Flash Memory

The MAV-777 has a built-in PCMCIA slot that allows you to record and transfer your user settings from one machine to another. Just plug in a flash memory card or **Memory Stick**® media card with an adaptor and load the user settings. This convenient feature allows you to save commonly used settings on different **Memory Stick** IC recording media cards for quick and easy setups.

MEMORY STICK

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[4] *Requires the unit to be in a 2 In/2 Out or 1 In/ 3 Out configuration.*

Product Configuration

MAV-777

Optional Boards

Standard I/O

HD-SDI
(with monitoring
loop-through)

HD-SDI x2

Downconverted
SD-SDI
with superimposed TC

Downconverted
SD-SDI x2
(one with superimposed TC)

Sony Multi-Access Video Disk Recorder

Options

BKMA-720*
HDCAM
Input Board

HD-SDI

Downconverted
SD-SDI with superimposed TC

BKMA-730*
HDCAM
Output Board

HD-SDI x2

Downconverted
SD-SDI x2 (one with superimposed TC)

I/F
Board

Cable

I/F
Board

GbE NIC

CD ROM

BKMA-750

PC

Optical
GbE Cable

To Other
Systems

GbE Switch

BKMA-750
Asynchronous Network I/F Kit**

* Two BKMA-720 HDCAM Input Boards required for 3 In/1 Out configuration.
BKMA-720 HDCAM Input Board and BKMA-730 HDCAM Output Board required for 2 In/2 Out configuration.
Two BKMA-730 HDCAM Output Boards required for 1 In/3 Out configuration.
** The optional BKMA-750 Asynchronous Network I/F Kit contains two interface Boards, a cable, and a CD ROM.

Other Options

BKMA-506
Disk Recorder Control Panel

RMM-555
Rack Mount Kit

Dedicated Control Panels

With the following dedicated control panels,
you can effortlessly control your MAV-777.

The **MAVE-F555** is a dedicated editing panel
intended for use with the MAV-777.
Its features include:
• File selection, search, and display.
• Cut insertion, delete, and other
  nonlinear editing functions.
• Control of external VTR.

The **MAVE-D555** is a dial panel that connects
to the MAVE-F555. Its features include:
• Jog/Shuttle dial for locating clips.
• Entry of edit points and duration using
  numeric keypad.
• Edit pattern and parameter selection.
• LCD display.

The **BKNE-1011** connects to the MAVE-D555.
It is used to control audio input and
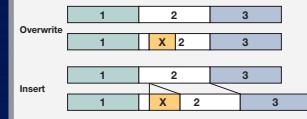output levels and to control effects.
Its features include:
• Master fader control.
• Independent control of each audio track.
• Transition lever to manually execute
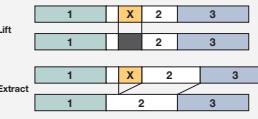 effect transitions.
• Effect parameter controls.

Editing With The MAV-777

ADDING

Overwrite

| 1 | 2 | 3 |
| 1 | X 2 | 3 |

Insert

| 1 | 2 | 3 |
| 1 | X 2 | 3 |

DELETING

Lift

| 1 | X 2 | 3 |
| 1 | | 2 | 3 |

Extract

| 1 | X | 2 | 3 |
| 1 | 2 | 3 |

Adding clips is easy. You can overwrite or
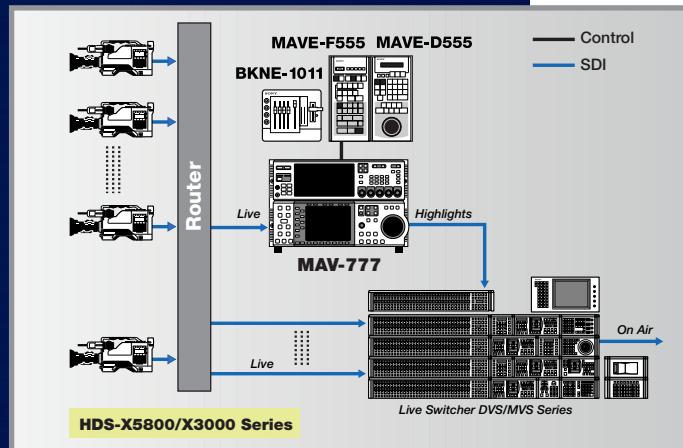insert a clip at any point.

Deleting clips is also easy. You can lift a
clip and leave a blank in the program, or
you can extract the clip and close the gap.

Because the MAV-777 is nonlinear in nature, inserting and extracting clips is
inherently much easier to perform and less time consuming than with a
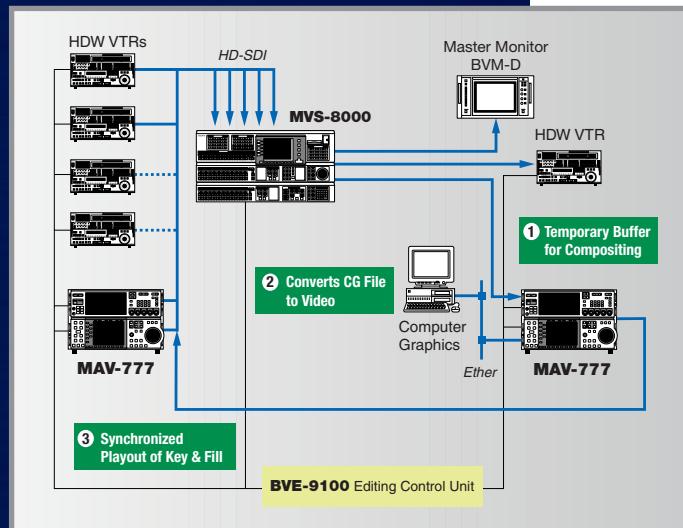conventional VTR.

System Configurations

1. Live Production: Highlight Editing of Live Events

Control
SDI

MAVE-F555 MAVE-D555
BKNE-1011
Live
Highlights
MAV-777
On Air
Live
HDS-X5800/X3000 Series
Live Switcher DVS/MVS Series
Router

Features and Benefits

- Ability to edit and playback highlights during a live program.
- Edited material can be used after the event for sports news highlights.
- Nonlinear nature allows for easy and quick turnaround of edited material.
- Fewer VTRs required, which reduces cost.
- Simultaneous recording of live feeds while editing.

2. Postproduction Application

HDW VTRs
HD-SDI
Master Monitor
BVM-D
MVS-8000
HDW VTR
❶ Temporary Buffer for Compositing
❷ Converts CG File to Video
Computer Graphics
MAV-777
Ether
MAV-777
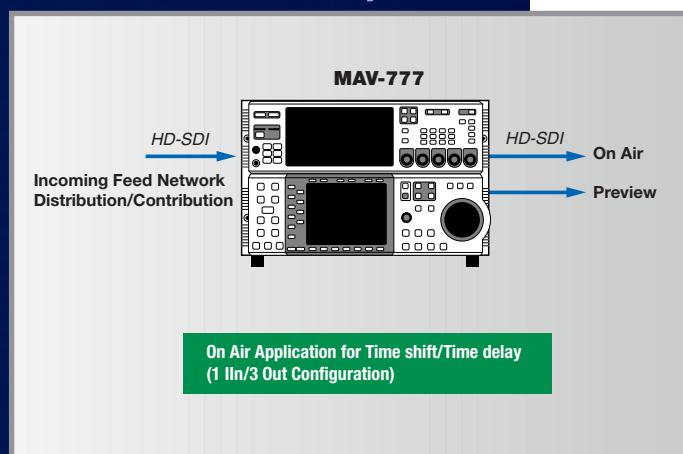❸ Synchronized Playout of Key & Fill
BVE-9100 Editing Control Unit

Features and Benefits

- Direct access to video and graphics files on the MAV-777, and quick cue up and replay improves operability and efficiency.
- ❶ Useful as a temporary buffer for compositing. Allows several layers to be created efficiently by buffering and re-feeding composite material.
- ❷ Simple and inexpensive conversion of graphics files to video files.*
- ❸ Synchronized key and fill playout allows for easy compositing of material.
- Ability to record source material as a background operation while performing other operations (i.e. multitasking).

* Requires additional software

3. Time Shift and Time Delay

MAV-777
HD-SDI
HD-SDI
On Air
Incoming Feed Network Distribution/Contribution
Preview
On Air Application for Time shift/Time delay (1 IIn/3 Out Configuration)

Features and Benefits

- Ability to delay playout from five seconds to several days.
- Ideal system for delayed playout for editing purposes.
- Much less expensive than a configuration requiring multiple VTRs.
- Programming can be set to automatically play at a specified time for distribution of material to various geographical areas, different time zones, or to remote stations.
- Programming can be set to automatically record at a specified time, which is useful for recording incoming satellite feeds during off hours or at remote stations.

Specifications

General

Power requirements:	AC 100 V to 240 V, 50 Hz to 60 Hz
Power consumption:	550 W
Operating temperature:	+41°F to +104°F (+5°C to +40°C)
Storage temperature:	-4°F to +140°F (-20°C to +60°C)
Humidity:	25% to 80% (relative humidity)
Weight:	110 lb (50 kg)
Dimensions (W x H x D):	19-inch rack mountable 6U height 16 3/4 x 10 1/2 x 25 5/8 inches (424 x 265 x 650 mm)

Operational Performance

Recording/Playback time:	
MAV-777/04:	4 hours
MAV-777/08:	8 hours
Search Speed:	
SHUTTLE mode:	Max. ±500 times normal speed (Maximum speed range ±32/...±100.../±500 selectable) frame by frame (±4 times)
JOG mode:	Up to ±4 times normal speed
VAR mode:	Up to ±1 times normal speed
Cue up time:	0.5 seconds
Time delay[1]:	Minimum 2 seconds
Clip:	Minimum duration 1 frame, up to 5,000 clips

Digital Video Performance

Frame rate:	1080/59.94i
Sampling frequency:	Y: 74.25 MHz/1.001, Pb/Pr: 37.125/1.001 MHz
Quantization:	10 bits/sample of input-output signal
Compression:	DCT Intraframe, HDCAM format

Digital Audio Performance

Sampling frequency:	48 kHz
Quantization:	20 bits

Processor Adjustment Range

Video:	
Video level:	±3 dB/-∞ to 3 dB selectable
Chroma level:	±3 dB/-∞ to 3 dB selectable
Setup:	±30 IRE
Hue:	±30°
System sync phase:	0±1H (13.5 ns step)
Audio:	
Input level:	-∞ to 20 dB
Output level:	-∞ to 12 dB
Output phase:	-127 to +128 samples
Downconvert mode: (selectable)	Edge crop Letterbox Squeeze

[1] Time delay between recording and playout

Input/Output

1) 1-input/1-output configuration
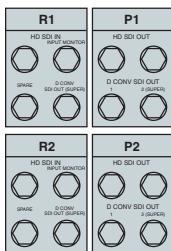

Inputs		
HD SDI:		BNC (with monitoring loop-through) x1 port (R1) SMPTE 292M/BTA S-004/ ITU-R.BT 709
HD reference video:		BNC (with loop-through) x1
SD reference video:		BNC (with loop-through) x1
Digital audio:		BNC (stereo pair x2) x1 port, AES/EBU
Timecode:		BNC x1 (R1)
System timecode:		BNC x1

Outputs		
HD SDI:		BNC x2 ports (P1) SMPTE 292M/BTA S-004/ ITU-R.BT 709
Downconverted SDI:		R1: BNC x1 port (with superimposed TC) P1: BNC x2 ports (one with superimposed TC)
Digital audio:		BNC (stereo pair x2) x1 port, AES/EBU
Timecode:		BNC x1 (P1)
Video monitor:		HD-SDI BNC x1 (with superimposed TC) SD-SDI x1 (with superimposed TC) Analog composite x1 (with superimposed TC)
Analog audio L/R:		XLR-3-pin type x2
Headphones:		JM-60 stereo phone jack

2) 1-input/3-output configuration (with two optional BKMA-730 boards)

Inputs		
HD SDI:		BNC (with monitoring loop-through) x1 port (R1) SMPTE 292M/BTA S-004/ ITU-R.BT 709
HD reference video:		BNC (with loop-through) x1
SD reference video:		BNC (with loop-through) x1
Digital audio:		BNC (stereo pair x2) x1 port, AES/EBU
Timecode:		BNC x1 (R1)
System timecode:		BNC x1

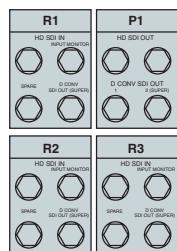| Outputs		
HD SDI:		BNC x6 ports (two each on P1, P2, P3) SMPTE 292M/BTA S-004/ ITU-R.BT 709
Downconverted SDI:		R1: BNC x1 port (with superimposed TC) P1: BNC x2 ports (one with superimposed TC) P2: BNC x2 ports (one with superimposed TC) P3: BNC x2 ports (one with superimposed TC)
Digital audio:		BNC (stereo pair x2) x3 ports, AES/EBU
Timecode:		BNC x3 (P1, P2, P3)
Video monitor:		HD-SDI BNC x1 (with superimposed TC) SD-SDI x1 (with superimposed TC) Analog composite x1 (with superimposed TC)
Analog audio L/R:		XLR-3-pin type x2
Headphones:		JM-60 stereo phone jack

Specifications

3) 2-input/2-output configuration (with optional BKMA-720 and BKMA-730 boards)

Inputs	
HD SDI:	BNC (with monitoring loop-through) x2 ports (R1, R2) SMPTE 292M/BTA S-004/ ITU-R.BT 709
HD reference video:	BNC (with loop-through) x1
SD reference video:	BNC (with loop-through) x1
Digital audio:	BNC (stereo pair x2) x2 ports, AES/EBU
Timecode:	BNC x2 (R1, R2)
System timecode:	BNC x1
Outputs	
HD SDI:	BNC x4 ports (two each on P1, P2) SMPTE 292M/BTA S-004/ ITU-R.BT 709
Downconverted SDI:	R1: BNC x1 port (with superimposed TC) R2: BNC x1 port (with superimposed TC) P1: BNC x2 ports (one with superimposed TC) P2: BNC x2 ports (one with superimposed TC)
Digital audio:	BNC (stereo pair x2) x2 ports, AES/EBU
Timecode:	BNC x2 (P1, P2)
Video monitor:	HD-SDI BNC x1 (with superimposed TC) SD-SDI x1 (with superimposed TC) Analog composite x1 (with superimposed TC)
Analog audio L/R:	XLR-3-pin type x2
Headphones:	JM-60 stereo phone jack

4) 3-input/1-output configuration (with two optional BKMA-720 boards)

Inputs	
HD SDI:	BNC (with monitoring loop-through) x3 ports (R1, R2, R3) SMPTE 292M/BTA S-004/ ITU-R.BT 709
HD reference video:	BNC (with loop-through) x1
SD reference video:	BNC (with loop-through) x1
Digital audio:	BNC (stereo pair x2) x3 ports, AES/EBU
Timecode:	BNC x2 (R1, R2)
System timecode:	BNC x1
Outputs	
HD SDI:	BNC x2 ports (P1) SMPTE 292M/BTA S-004/ ITU-R.BT 709
Downconverted SDI:	R1: BNC x1 port (with superimposed TC) R2: BNC x1 port (with superimposed TC) R3: BNC x1 port (with superimposed TC) P1: BNC x2 ports (one with superimposed TC)
Digital audio:	BNC (stereo pair x2) x1 port, AES/EBU
Timecode:	BNC x1 (P1)
Video monitor:	HD-SDI BNC x1 (with superimposed TC) SD-SDI x1 (with superimposed TC) Analog composite x1 (with superimposed TC)
Analog audio L/R:	XLR-3-pin type x2
Headphones:	JM-60 stereo phone jack

Remote	
RS-422A:	
Remote In 1/2/3/4:	D-Sub 9-pin (female) x4, Sony 9-pin VTR protocol or Sony 9-pin Disk protocol
Remote In/Out 1/2:	D-Sub 9-pin (female) x2, Sony 9-pin VTR protocol (for external VTR control)
Remote In (TO MAVE-F555):	D-Sub 9-pin (female) x1
Remote Parallel I/O:	D-Sub 50-pin (female) x1, 24 inputs (5 V CMOS), 24 outputs (Open collector)
Ethernet:	RJ-45 x1, 10Base-T
TBC Remote P1/P2/P3:	D-Sub 9-pin (female) x3, Sony 9-pin VTR protocol

Video Effects	
Effects:	Dissolve, Single Wipe, Split Screen

SONY

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